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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/753,876	01/09/2004	Shinya Kobayashi	03280090AA	6120

7590 05/31/2006

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EXAMINER	
FIDLER, SHELBY LEE	

ART UNIT	PAPER NUMBER
2861	

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/753,876	KOBAYASHI ET AL.	
	Examiner	Art Unit	
	Shelby Fidler	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-7 and 9* is/are rejected.

7)☒ Claim(s) *3,8,10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asauchi et al. (US 6431676 B2) in view of Fuller et al. (US 6345875 B1).

Asauchi et al. teach the following:

***regarding claim 1**, an inkjet device comprising:

an inkjet head (print head 50) having multiple nozzles arranged at equally spaced intervals in a row (col. 6, lines 19-21), the inkjet head ejecting ink droplets from the multiple nozzles onto target pixels on a medium (e.g. Fig. 1B);

a data generating unit (printer driver) that generates both ejection data (print signals) from pattern data (col. 5, lines 56-59);

a drive-waveform-generation-signal generating unit (controller 45, Fig. 2) that generates a drive-waveform generation signal (CLK1, col. 7, lines 5-10);

a transfer-signal generating unit (oscillator 44, Fig. 2) that generates a transfer signal (CLK, Fig. 2);

a drive-waveform generating unit (waveform generation circuit 46, Fig. 2) that generates a drive waveform (e.g. COM) in accordance with the drive-waveform generation signal (CLK1,

col. 6, lines 5-10 and col. 7, lines 25-29 show that the generation of a waveform begins with CLK1 and the creation of the waveform is performed using CLK2 and CLK3);

an ejection-data transferring unit (shift registers 51A-N) that transfers the ejection data (SI) in accordance with the transfer signal (CLK, col. 6, lines 25-27); and

a control unit (controller 45, Fig. 2) that controls, based on the drive waveform and the ejection data transferred form the ejection-data transferring unit, the inkjet head to selectively eject ink droplets from the multiple nozzles (col. 6, lines 48-53)

Asauchi et al. do not expressly teach the following:

***regarding claim 1**, the data generating unit generates timing control data from pattern data; the drive-waveform-generation signal is generated in accordance with timing control data; and the transfer signal generating unit generates a transfer signal in accordance with the timing control data

Fuller et al. teach the following:

***regarding claim 1**, the data generating unit generates timing control data (timing specifications, col. 4, lines 27-35); the drive-waveform-generation signal is generated in accordance with timing control data and the transfer signal generating unit generates a transfer signal in accordance with the timing control data (col. 4, lines 35-48)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize timing control data to generate timing and control signals into Asauchi et al.'s invention. The motivation for doing so, as taught by Fuller et al., is to change the ink jet print resolution (col. 4, lines 49-53).

Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asauchi et al. (US 6431676 B2) in view of Fuller et al. (US 6345875 B1), as applied to claim 1 above, and further in view of Ito et al. (US 6758550 B2).

Asauchi et al. teach the following:

***regarding claims 2 and 7**, a conveying unit that conveys the medium in a first direction relative to the inkjet head (sheet feed motor 23, Fig. 2);

Fuller et al. teaches the following:

***regarding claims 2 and 7**, the timing control data includes drive-waveform generation timing data, which determine whether to generate the drive waveform for the each of the plurality of lines ("signals to control droplet ejection rate and control the clock rate"; therefore, determining whether to generate a waveform, col. 4, lines 35-42), and ejection-data transfer timing data (bitshift signal 401, col. 4, lines 44-48), which determine whether to transfer the ejection data for each of the plurality of lines (col. 3, lines 20-25)

Asauchi et al. modified by Fuller et al. do not expressly teach the following:

***regarding claims 2 and 7**, a plurality of lines are defined on the medium, each of the plurality of lines extending in a second direction that is orthogonal to the first direction;

the plurality of lines has an interval in the first direction that is smaller than a minimum ejection frequency of each of the multiple nozzles; and

the timing control data are defined for each of the plurality of lines, and include drive-waveform generation timing data, which determine whether to generate the drive waveform for the each of the plurality of lines, and ejection-data transfer timing data, which determine whether to transfer the ejection data for each of the plurality of lines

Ito et al. teach the following:

***regarding claims 2 and 7,** a plurality of lines are defined on the medium (partitioning walls 6 in the form of a grid, Figs. 5 and 6), each of the plurality of lines extending in a second direction (x-direction) that is orthogonal to the first direction (partitioning walls extend in the x-direction, which is orthogonal to the sub-scan direction, or y-direction, col. 15, lines 50-57, Fig. 1);

the plurality of lines has an interval in the first direction that is smaller than a minimum ejection frequency of each of the multiple nozzles (col. 20, lines 7-9); and

the timing control data are defined for each of the plurality of lines (to eject ink into target pixels, the timing must be defined for the lines, col. 21, lines 56-61)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize a plurality of lines in the invention of Asauchi et al. as modified Fuller et al. The motivation for doing so, as taught by Ito et al., is to establish filter element formation regions into which the printhead can be controlled to eject (col. 23, lines 4-10 and col. 24, lines 44-60).

Claims 4, 5, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asauchi et al. (US 6431676 B2) in view of Fuller et al. (US 6345875 B1), as applied to claim 1 above, and further in view of Kobayashi et al. (US 6749279 B2).

Asauchi et al. teach the following:

***regarding claim 5,** the control unit controls the inkjet head based on the ejection data stored in the ejection shift register (col. 6, lines 25-27 and lines 40-53)

Asauchi et al. modified by Fuller et al. teach all claimed limitations except for the following:

***regarding claims 4 and 9,** a data-rotation-instructing signal generating unit that generates a data-rotation instructing signal in accordance with the timing control data, wherein

the control unit includes an ejection shift register that stores ejection data, at least one storage shift register that stores ejection data, and a data rotating unit that rotates the ejection data between the ejection shift register and the at least one storage shift register in accordance with the data-rotation instructing signal

Kobayashi et al. teach the following:

***regarding claims 4 and 9**, a data-rotation-instructing signal generating unit (timing controller 106) that generates a data-rotation instructing signal (sub-pixel-synchronization signal 1109, Fig. 17a) in accordance with the timing control data (col. 25, lines 29-38 and col. 5, lines 28-32), wherein the control unit includes an ejection shift register that stores ejection data (shift register 804, Fig. 17a), at least one storage shift register that stores ejection data (shift register 805, Fig. 17a), and a data rotating unit (shift register 804 acts as the rotating unit by retrieving data 807 from register 805) that rotates the ejection data between the ejection shift register and the at least one storage shift register in accordance with the data-rotation instructing signal (col. 27, lines 6-10)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize data rotation in the invention of Asauchi et al. modified by Fuller et al. The motivation for doing so, as taught by Kobayashi et al., is to give each of the nozzles a chance for ejection by turns (col. 27, lines 29-46).

Allowable Subject Matter

Claims 3, 8, and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The primary reason for the allowance of claim 3 is the inclusion of the limitations of an inkjet device including a plurality of lines defined on the medium, each of the plurality of lines extending in a second direction that is orthogonal to the first direction, and an ejection-data transferring unit that transfers the ejection data only at lines which include at least one of the target pixels and at which the ink droplets are ejected based on ejection data different from previously transferred ejection data. It is these limitations found in the claims, as it is claimed in the combination, that has not been found, taught, or suggested by the prior art of record which indicates allowable subject matter.

The primary reason for the indication of allowable subject matter of claim 8 is the inclusion of a control method for controlling an inkjet device including the method steps of the timing control data being defined for each of a plurality of lines defined on the medium, and the ejection data is transferred only at lines which include at least one of the target pixels and at which the ink droplets are ejected based on ejection data different from previously transferred ejection data. It is these steps found in the claims, as they are claimed in the combination, that has not been found, taught, or suggested by the prior art of record which indicates allowable subject matter.

The primary reason for the indication of allowable subject matter in claim 10 is the inclusion of the limitation of an inkjet device including ejection-data transfer timing data that is a bit signal that selectively takes either a first logical value or a second logical value, such that a data transfer is requested when the ejection-data transfer timing data has the first logical value, and the ejection-data transfer timing data takes the first logical value only at lines where the drive-waveform generation timing data has the first logical value and also ink droplets are ejected using ejection data different from ejection data which are previously transferred. It is

this limitation found in the claims, as it is claimed in the combination, that has not been found, taught, or suggested by the prior art of record which makes these claims allowable over the prior art.

Response to Arguments

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection. See the above rejection, Asauchi et al. (US 6431676 B2) in view of Fuller et al. (US 6345875 B1).

Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on MWF 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SLF

5/06

R. FEGGINS
PRIMARY EXAMINER